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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/620,443

07/17/2003

Kouichi Ihata

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7590

05/13/2005

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EXAMINER

SCHEUERMANN, DAVID W

ART UNIT

PAPER NUMBER

2834

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Please find below and/or attached an Office communication concerning this application or proceeding.

✓ R F

<b>Office Action Summary</b>	<b>Application No.</b> 10/620,443	<b>Applicant(s)</b> IHATA ET AL.	
	<b>Examiner</b> David W. Scheuermann	<b>Art Unit</b> 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 March 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 7-10 and 25-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 11-24 and 29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
- 1. ☒ Certified copies of the priority documents have been received.
  - 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election with traverse of Group I, claims 1-6, 11-24 and 29 in the reply filed on March 11, 2005 is acknowledged. The traversal is on the ground(s) that:

"...all claims 1-29 is sufficiently related that a thorough search for the subject matter of any one Group of claims would encompass a search for the subject matter of the remaining claims. Thus, it is respectfully submitted that the search and examination of the entire application could be made without serious burden. See MPEP §803 in which it is stated that "if the search and examination of an entire application can be made without serious burden, the examiner must examine it on the merits, even though it includes claims to independent or distinct inventions" (emphasis added). It is respectfully submitted that this policy should apply in the present application in order to avoid unnecessary delay and expense to Applicants and duplicative examination by the Patent Office."

This is not found persuasive because the inventions are distinct from each other for the reasons recited in the restriction requirement. Furthermore, although there could be some overlap of search for the two inventions, the search for specific lead terminal details of a rectifier diode would be divergent from that of a separator wall.

The requirement is still deemed proper and is therefore made FINAL.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1,4,11-13,15,17,18 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya et al., US 4841182 in view of Abadia et al., US 5883450 and Irie et al., US 5710467. Tsuchiya et al., US 4841182 show:

An alternator for use in an automotive vehicle, the alternator comprising:

A housing including a front frame 1b and a rear frame 1a;

A cylindrical stator 7 including an armature coil 7a, the cylindrical stator being contained in the housing;

A rotor 3 rotatably disposed inside the cylindrical stator and supported in the housing;

A rectifier 10 mounted on the rear frame;

A rear cover (see figure 1) covering the rectifier, the rear cover being fixed to the housing; and

A cooling fan 3a for introducing cooling air into the housing through sir inlets formed on a rear surface of the rear frame after cooling the rectifier, the cooling fan being connected to the rotor, wherein:

The rectifier includes a minus heatsink plate 16 on which minus rectifier elements are mounted and a plus heatsink plate 15 on which plus rectifier elements are mounted, the minus heatsink plate being disposed to face the rear surface of the rear frame forming an air passage therebetween, the plus heatsink plate being disposed to face the rear cover;

[A lead terminal led out of each minus rectifier element extends in an axial direction of the rotor toward the rear cover];

The minus heatsink plate includes cooling fins extending in the axial direction and forming radial air passages between the cooling fins; and

[The rear cover includes a plurality of radial openings that are open in a radial direction of the rotor, so that the cooling air is introduced from the radial openings upon rotation of the cooling fan and flows through the radial air passages between the cooling fins and through the air passage between the minus heatsink plate and the rear surface of the rear frame.] Tsuchiya et al., US 4841182 does not expressly disclose the

Art Unit: 2834

bracketed structure. Abadia et al., US 5883450 discloses an axially orientated negative diode lead, for the purpose of inherent purpose of extending the lead into the cooled region between the diode body and the cover. Irie et al., US 5710467 discloses a rear cover 4 with a plurality of radial openings 40, see column 4, lines 5-15, for the purpose of inletting cooling air to the rectifier. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to extend the leads of the negative diode leads in the alternator of Tsuchiya et al., US 4841182 toward the rear cover and place radial holes in the cover. One of ordinary skill in the art would have been motivated to do this to achieve superior cooling of the rectification diodes.

Re claims 4 and 12 note cooling fins 15a and 5b positioned about the outer periphery of the positive heat sink. .

Re claim 13 and 17 note cooling fins positioned about the outer periphery of the negative heat sink as shown in figure 8(b).

As to claim 15, note that the holes in the cover of the combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467 are both axial and radial.

Re claim 18, note figure 8(b) and figure 9 showing negative side 16, positive side 16 and mounting bolt 3 which has a mounting hole aligned therewith as depicted in figure 12.

Claims 2, 3 and 14 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467 in view of Adachi et al., US 5682070. The

Art Unit: 2834

combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467 discloses the invention substantially as claimed as set forth in the rejection of claim 1, supra. The combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467 does not expressly disclose, "...wherein the radial passages formed between the cooling fins are arranged along radial lines converging to a center of the rotor" and "...wherein a height of the cooling fin in the axial direction is made equal to or larger than a width of the radial opening in the axial direction, so that foreign particles are prevented from entering into the housing from the radial opening". Adachi et al., US 5682070 discloses radially aligned and shaped fins 282(b), see column 15, lines 35-51, for the purpose of cooling the rectification diodes. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use radial cooling fins and extend to height of the cooling fin in the axial direction to substantially cover the radial opening in the axial direction in the device of the combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467. One of ordinary skill in the art would have been motivated to do this to achieve superior cooling. Furthermore, the limitations recited in claims 2, 3 and 14 16 do not patentably define over the combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467 because a change in size or shape is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

Claims 5, 6 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Tsuchiya et al., US 4841182, Abadia et al., US

Art Unit: 2834

5883450 and Irie et al., US 5710467 in view of DuBois et al., US 5757096. The combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467 discloses the invention substantially as claimed as set forth in the rejection of claim 1, supra. The combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467 does not expressly disclose, "...the air passage between the minus heatsink plate and the rear surface of the rear frame includes a plurality of ditches formed on the rear surface of the rear frame; the plurality of ditches are formed along radial lines converging to a center of the rotor and communicated with the air inlets formed on the rear surface of the rear frame; and an end of the minus rectifier elements is exposed to the ditches so that the rectifier elements are cooled by the cooling air flowing through the ditches." DuBois et al., US 5757096 discloses heat fins 52 of rear housing 50, for the purpose of increasing the surface area of the rear housing to improve cooling. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to add ditches or heat fins to the rear housing of the motor of the combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467. One of ordinary skill in the art would have been motivated to do this to achieve superior cooling. Moreover the ditches merely increase surface area (change in shape), a well-known mechanism for increasing heat transfer efficiency. Furthermore, the limitations recited in these claims do not patentably define over the combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467 because a change in size or shape is generally recognized



Art Unit: 2834

as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467 in view of Cheetham et al., US 3538362. The combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467 discloses the invention substantially as claimed as set forth in the rejection of claim 11, supra. The combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467 do not expressly disclose, "...wherein at least either the cooling fins or the second cooling fins are formed with an angle slanted toward a rotational direction of the rotor, viewed from an outer periphery of the minus heatsink plate", "...wherein at least either the cooling fins or the second cooling fins are formed in parallel to one another thereby forming parallel air passages therebetween," or "...wherein at least either the cooling fins or the second cooling fins are formed in a zigzag shape with respect to the radial direction". Cheetham et al., US 3538362 disclose fins having portions parallel, portions zigzag shaped and at an angle slanted toward a rotational direction of the rotor, for the purpose of efficiently cooling the rectifier heatsink. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the cooling fin pattern of Cheetham et al., US 3538362 on the alternator of the combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467. One of ordinary skill in the art would have been motivated to do this more effectively cool the rectifier diodes. Moreover, one of ordinary skill in the art would have arrived at

Art Unit: 2834

the recited fin patterns through routine experimentation to improve cooling.

Furthermore, the limitations recited in claims 19-21 do not patentably define over the combination of Tsuchiya et al., US 4841182, Abadia et al., US 5883450 and Irie et al., US 5710467 because a change in size or shape is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

### **Conclusion**


Any inquiry concerning this communication or earlier communications from the examiner should be directed to David W. Scheuermann whose telephone number is (571) 272-2035. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached at (571) 272-2044. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1562.

dws  
May 5, 2005

  
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